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A new species and a new record of *Herpothallon* (lichenized *Ascomycota*) from India

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Abstract — *Herpothallon sticticum*, a new lichen species is described from the Eastern Himalaya, India. *Herpothallon echinatum* is also reported for the first time from India.

Key words — *Arthoniales*, *Arthoniaceae*, lichens

Introduction

A number of species in the lichen genus *Herpothallon* Tobler (*Arthoniales*) have recently been reported from India (Jagadeesh Ram et al. 2009, Jagadeesh Ram & Sinha 2009) since its reinstatement by Aptroot et al. (2009). Further examination of additional specimens from Arunachal Pradesh and Sikkim in the eastern Himalayan ranges revealed the presence of an additional new species and a new record for India. Now, 11 *Herpothallon* species are known from India. The new species is described below and a brief note on the new record is provided.

Materials & methods

Specimens collected from Eastern Himalaya and deposited in BSA were investigated. External morphological features were observed with an Olympus SZ61 dissecting microscope. Thin hand-cut sections of thalli were mounted in water, 10% KOH solution, Lugol's iodine solution and lactophenol cotton blue (LCB) and examined with a Leica DM 2500 compound microscope. The thallus colour reactions were carried out by 10% aqueous potassium hydroxide solution (K), aqueous calcium hypochlorite solution (C), Steiner's stable solution (P) and long wavelength UV. Calcium oxalate crystals in the thallus were identified by 25% H_2SO_4 mounts (Aptroot et al. 2009). The lichen substances were identified by thin layer chromatography (Orange et al. 2001).

New species

Herpothallon sticticum Jagadeesh & G.P. Sinha, **sp. nov.** Fig. 1

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Thallus corticola, epiphloeodes, byssoideus, glauco-griseus ad luteo-griseus; prothallus et hypothallus albidus; pseudisidiis granularibus ad globosis, 0.05–0.1(–0.25) × 0.05–0.1 (–0.2) mm; apothecia et pycnidia ignota; acidum sticticum et consticticum continens.

Type – India, Arunachal Pradesh, West Kameng District, Jameri Road side, on *Bombax* trunk, alt. 1200 m, 11 October 2001, *G.P. Sinha & T.A.M. Jagadeesh Ram 11331* (**Holotype** ASSAM-BSA).

Etymology: the species epithet refers to the major secondary metabolite, stictic acid.

Thallus corticolous, epiphloeodal, tightly attached, suborbicular to irregular, 3–7 cm across, glaucous grey to pale yellow-grey, sometimes with an ochraceous tinge, thinly pruinose, minutely felty, up to 65–95(–140) µm thick, with calcium oxalate crystals; crystals many, scattered, 3–8(–16) µm wide. Hypothallus white, below the entire thallus, closely attached, hyphae 1–2 µm wide. Prothallus whitish, sometimes indistinct, closely attached, byssoid, of closely interwoven hyphae, up to 2 mm wide. Pseudoisidia numerous, granular to globose or irregular wart-like, sometimes slightly flattened and elongated, dense, minutely felty with projecting hyphae, of the same colour as the thallus, 0.05–0.1(–0.25) × 0.05–0.1(–0.2) mm, merging or bursting into minute soredia-like granules throughout. Photobiont *Trentepohlia*, cells single or in short, irregular threads, 8–15 × 5–9 µm. Asci and pycnidia not seen.

Chemistry – Thallus K+ yellow, C–, P+ orange, I+ and KI+ pale blue in patches (section), UV–; stictic acid (major), constictic acid (minor), hypostictic and norstictic acids (trace) detected by TLC.

Additional specimens examined – **India**, **Sikkim**, East Sikkim: near Setipool, 900 m, 20 Apr. 2010, *G. Swarnalatha 5657* (BSA); near Samdong, on the way to Dikchu, 940 m, 21 Apr. 2010, *G. Swarnalatha 5726*, *5728* (BSA); 6 km to Pakyong, on the way to Rhenok, 537 m, 22 Apr. 2010, *G. Swarnalatha 5816* (BSA); Gangtok, BSI – SHRC campus, 1724 m, 17 Apr. 2010, *G. Swarnalatha 6201*, *6204* (BSA). North Sikkim: on the way to Phodong, near Panchong, 1434 m, 24 Apr. 2010, *G. Swarnalatha 5832* (BSA); 1 km to seven sister water falls from Gangtok, 1578 m, 24 Apr. 2010, *G. Swarnalatha 5859* (BSA); Tangla, 1689 m, 24 Apr. 2010, *G. Swarnalatha 5889* (BSA).

Remarks – *Herpothallon sticticum* is characterized by the thallus with granular to globose, irregular wart-like pseudoisidia that merge or burst into minute soredia-like granules and the stictic acid complex as the secondary metabolites. *Herpothallon furfuraceum* G. Thor, *H. granulare* (Sipman) Aptroot & Lücking, and *H. granulosum* Jagadeesh & G.P. Sinha are other species where the pseudoisidia merge into soredia-like granules, but all differ in having alternative chemistry (Aptroot et al. 2009, Jagadeesh Ram et al. 2009). Chemically *H. sticticum* resembles *H. isidiatum* Jagadeesh & G.P. Sinha, a common species known from India but distinguished by the long cylindrical pseudoisidia in

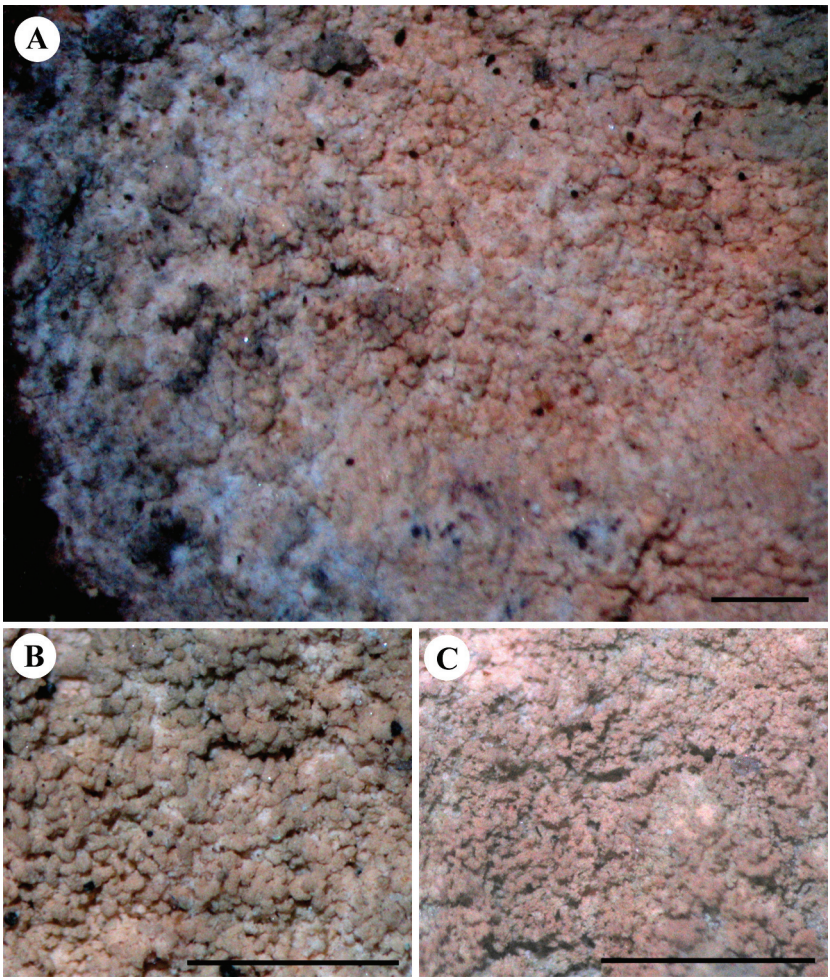

Fig. 1. Habit of *Herpothallon sticticum* (holotype): A. thallus with prothallus, B. enlarged pseudoisidiate region, C. enlarged pseudoisidiate-sorediate region. Scale = 1 mm.

the latter (Jagadeesh Ram et al. 2009). At present *H. sticticum* is known from Arunachal Pradesh and Sikkim in the Eastern Himalaya.

New record

Herpothallon echinatum Aptroot, Lücking & Will-Wolf

This species was previously known from Australia, Indonesia, Norfolk Island, Papua New Guinea, Taiwan, and Thailand (Aptroot et al. 2009) and has

now been found in Sikkim. It is characterized by the loosely attached thallus lacking calcium oxalate crystals, white hypothallus and prothallus, cylindrical pseudoisidia up to 0.5 × 0.1 mm, and the presence of psoromic acid.

Specimen examined – **INDIA**, **Sikkim**, Gangtok, Pengala, 27°22′24.7″N, 88°35′56.6″E, alt. 1948 m, 24 May 2008, *T.A.M. Jagadeesh Ram 4480* (BSA).

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